National Institute of Environmental Health Sciences

Warm winter is associated with low incidence of ST elevation myocardial infarctions and less frequent acute coronary angiographies in an alpine country

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Abstract:

BACKGROUND: Weather conditions influence symptoms in chronic stable coronary artery disease (CAD). Whether the ongoing climate change, with continuous and rapid temperature increases, also has an impact on the incidence and outcome of non-ST elevation (NSTEMI) and ST elevation (STEMI) myocardial infarctions referred for acute coronary angiography (CA) is less clear. METHODS: According to weather data from the Institute of Meteorology and Geophysics, Innsbruck University, the 2005/2006 winter was very cold (CW) and the 2006/2007 winter extraordinarily warm (WW). As the overall invasive management of patients with acute coronary syndromes did not change substantially within these winters, we compared patients referred for acute CA suffering an acute STEMI or NSTEMI, their risk factors and in-hospital mortality rates between these two consecutive winters. RESULTS: As expected, the average temperature was lower (- 1.6 vs. + 5.9 degrees C; p < 0.001) and humidity was higher (82 vs. 79%; p < 0.012) in CW compared to WW, with no significant differences in other weather conditions (rainfall: 59 vs. 39 days; sunshine: 3.9 vs. 4.3 h/day; air pressure: 713.04 vs. 713.76 hPa). There were no differences in the number of overall CA (987 vs. 983) between these two winters, whereas the number of acute CA (12.9 vs. 10.4% of overall CA; p Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.046) and the diagnosis of STEMI as an indication of acute CA (74.0% vs. 62.7%; p Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.046) were higher in CW. Furthermore, patients in CW were younger (58.2 +/- 12.4 vs. 61.7 +/- 11.7 years; p < 0.03), had higher LDL cholesterol (134.8 +/- 44.6 vs. 116.7 +/- 36.0 mg/dl; p < 0.003) and were less frequently hypertensives (52.8 vs. 70.6%; p < 0.01). Other traditional risk factors were not different between WW and CW. In addition, there were no differences in in-hospital mortality rates in invasively diagnosed CAD, patients' nationalities (Austrians: 78.0 vs. 77.5%) and time from pain to arrival in the cath lab in STEMI patients (3.9 +/- 3.5 vs. 3.8 +/- 3.1 h). CONCLUSION: The average temperature increase of 7.5 degrees C from the cold to the warm winter was associated with a decrease in acute coronary angiographies, in particular due to a lower incidence of STEMI referred for primary percutaneous intervention.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Meteorological Factors, Precipitation, Temperature

Temperature: Fluctuations

Geographic Feature: ☑

resource focuses on specific type of geography

Mountain

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : Austria

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Cardiovascular Effect, Diabetes/Obesity, Morbidity/Mortality

Cardiovascular Effect: Heart Attack, Other Cardiovascular Effect

Cardiovascular Disease (other): Acute coronary angiographies; Hypertension

Population of Concern: A focus of content

Other Vulnerable Population: Pre-existing health conditions; Smoking status; Cholesterol levels; Body mass index (BMI)

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified